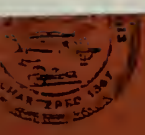

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Equity for Debt Exchanges and Security Returns

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Equity for Debt Exchanges and Security Returns

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EQUITY FOR DEBT EXCHANGES and SECURITY RETURNS: Further Evidence on the Wealth Effects of a Capital Structure Change

ABSTRACT

This paper provides evidence on the wealth effects of equity for debt exchanges. For our sample of 150 transactions, we examined the abnormal returns to stockholders, and to the holders of four classes of senior securities. Common stockholders earn significantly negative abnormal returns at the first announcement of an exchange, and also during the interval from the announcement through the day the exchange is completed. The evidence does not support the existence of wealth transfers between classes of security holders; the results do indicate, however, that firm value decreases in response to the exchange announcement. The negative abnormal returns to common stock are related to the size of the new equity issued in the exchange, however, the price pressure effect does not explain the total decline in common stock prices. The sample is partitioned into pure capital structure change, and those where cash was used along with equity, and there are notable differences in the results for these groups. Our results are consistent with previous studies which have found common stock price changes to be of the same sign as the change in leverage. Unlike previous studies, however, we find the negative revaluation of the common stock to be only temporary.

EQUITY FOR DEBT EXCHANGES and SECURITY RETURNS: Further Evidence on the Wealth Effects of a Capital Structure Change

1. INTRODUCTION

This paper examines the effects of equity for debt exchanges on the security returns of exchanging firms. In such transactions, the exchanging firm retires outstanding low-coupon (discount) debt by issuing new equity or a combination of new equity and cash. The immediate effects of the exchange are a one-time boost in accounting earnings, and a reduction in financial leverage, and according to the financial press, these effects have led to the sudden popularity of equity for debt exchanges.[1] Despite these apparent benefits, there are a number of other effects which may adversely affect the value of the firm, and it is important to study the valuation impact of these transactions on all classes of security holders.

An equity for debt exchange alters the firm's financing mix by replacing low cost debt with new equity, dilutes the ownership position of shareholders, and may change the asset mix when cash is used in the exchange. This combination of effects will result in different relative priorities of claims to the firm's cash flows, and may signal information about the firm to the capital markets. Moreover, the tax-preferred treatment of the transactions may allow the firm to satisfy sinking fund requirements at a lower after-tax cost. Each of these factors may affect security prices differentially, and we attempt to identify those

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[1] Since August, 1981, there have been more than 200 equity for debt exchanges.

which are predominant in overall security price changes.

The analysis of equity for debt exchanges also provides evidence on several related issues in corporate finance. First, an exchange decreases financial leverage, and thus provides an opportunity to examine new evidence on the relationship between capital structure and firm value.[2] Second, an exchange results in reduced debt service requirements; the evidence will indicate if this change results in wealth transfers from equity to senior securities in response to the new relative priorities of claims. Third, the results of this study will provide new evidence on the relative importance of accounting earnings versus cash flow, and the potential conflict between managerial goals and those of shareholders.[3] Finally, this study will provide evidence on the reaction of common stock prices to an increased supply of shares.

In the next section of the paper, we discuss the background material which is relevant. Included in the section are a discussion of the recent tax law changes which have motivated the resurgence of equity for debt exchanges, and a discussion of the valuation implications of the transactions. The data and methodology used to analyze the daily security returns are detailed in Sections 3 and 4, and the results of the analysis are presented in Section 5. The results include the daily abnormal returns to common stockholders around the announcement of the exchange, and the daily risk-adjusted returns on four classes of senior securities. We also provide evidence on the price pressure hypothesis,

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[2] Masulis (1980a,b), Mikkelson (1981), Dann (1981), and Dann and Mikkelson (1983) have examined this relationship by focusing on other financial transactions.

[3] Both this point and the one previous are agency issues which were first discussed by Jensen and Meckling (1976).

and compare the results for pure capital structure changes to those where cash was used along with new equity. Finally, in Section 6, we summarize the findings.

2. BACKGROUND

2.1 The Regulatory Environment

Equity for debt exchanges affect both the income statement and the balance sheet. As mentioned, the transaction results in a decrease in financial leverage and an increase in accounting earnings for the current period. The increased earnings result from the 'gain' on the transaction defined as the difference between the market and the par values of the exchanged bond(s). Under current accounting provisions, a firm may include the entire gain as ordinary income, subject to materiality discretion. Furthermore, under current tax laws, the entire gain from such a transaction is tax-free. The combined effect of the accounting and tax treatment of equity for debt exchanges has allowed many firms to report positive accounting earnings when they would have otherwise reported a loss for the period. Despite the apparently beneficial accounting effects of an exchange, there were very few such transactions prior to August, 1981. Several recent changes in tax legislation may explain the sudden popularity of the exchanges.

The goal of taking the excess of par over market value of discount bonds as a tax-free gain is not new. Until recently, the repurchase of discount bonds provided a strategy to accomplish this goal, because the gain on repurchase could be used to reduce the tax basis of existing assets. By reducing the tax basis of long-lived, non-depreciable assets,

the tax on the gain could be deferred indefinitely. The Bankruptcy Tax Act, which was effective January 1, 1981, limited the applicability of the basis reduction to depreciable assets, thereby precluding the use of discount bond repurchases to generate tax-free gains. The same tax legislation, however, provided the conditions under which equity for debt exchanges could provide the same tax-free gains.[4] The first equity for debt exchange was completed in August, 1981, and since that date, there have been approximately 200 such transactions.

Another potential motivation for the sudden popularity of these transactions was the availability of new tax shields provided by the Economic Recovery Tax Act (ERTA) of 1981. DeAngelo and Masulis (1980) examined the impact of tax shield substitutes for debt, and concluded that, to the extent that an optimal capital structure does exist and tax shield substitutes are increased, then firms which were at the optimal level will be motivated to reduce debt. This would enable those firms to avoid paying the bondholder's surplus on that portion of their debt which came to provide a reduced tax shield because of the new substitutes.[5] The Accelerated Cost Recovery System (ACRS) and safe harbor

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[4] Although the repurchase of discount debt lost its preferred tax status in January, 1981, it was not until mid-1981 when an investment banker discovered the loophole which allowed the exchanges to accomplish the same goals. While the IRS has not yet ruled on the tax status of the exchanges, it is generally considered that these transactions qualify as non-taxable recapitalizations if (i) a third party (usually an investment banking firm) takes an at risk position in the securities to be retired, and (ii) the common stock issued represents a material portion, frequently interpreted as 50%, of the market value of the debt retired.

[5] The criteria to be met before a firm would undertake an equity for debt exchange in this environment may explain why not all firms have done so. The criteria are (i) the firm be at an optimal level of leverage initially, (ii) it chooses to employ the new tax shield, and (iii) that, by so doing, it will lose some debt tax shield.

leasing provisions of ERTA are examples of new tax shields which may have been substituted for currently existing interest shields.

2.2 Valuation Implications

While the financial press has focused on the cosmetic effects of an equity for debt exchange, the overall valuation implications of such an exchange are not clear from a theoretical perspective. These transactions represent a tradeoff among a number of factors which affect firm value differentially, and it is difficult to predict which of those factors will dominate. Previous studies of capital structure change have identified and discussed in detail the various factors, and the predicted wealth effects of each on different classes of security holders.[6] We shall briefly discuss only those which are most pertinent to this study.

Tax effects. Because of the lower level of debt outstanding after the exchange, the firm's interest tax shield, and thereby, its after-tax cash flows are reduced. This should result in lower values for all of the firm's securities.

Changes in priority of outstanding claims. An exchange results in senior claims to the firms' cash flows being replaced by residual claims, thereby enhancing both the absolute and relative priority of all senior security holders.

Increase in the number of shares outstanding. The exchange results in a significant number of new shares being offered in the market on the pricing date. There are two potential valuation implications here, (i) current shareholder positions are diluted, and (ii) to the extent that a price pressure or supply effect exists, a decline in common stock prices could result.

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[6] See Masulis (1980a), Table 1, p. 146; Dann (1981), Table 1, p. 118; Vermaelen (1981), pp. 140-141; and especially Mikkelson (1981), pp. 239-243 and Table 1.

Information effects. The announcement of an equity for debt exchange could send conflicting signals to investors. Since a number of the firms in our sample used the exchange to manufacture a large proportion of their periodic earnings, an exchange might be indicative of a limited existing and future investment opportunity set which would provide a negative signal. Conversely, a firm may use the exchange to meet sinking fund payments, and because of the tax-preferred nature of the transaction, reduce the cost of this requirement.[7]

Most previous studies of capital structure change have found a positive relationship between the change in equity value and the direction of the change in financial leverage.[8] Dann (1981) examined the impact of common stock repurchases on the wealth of security holders, and found that the announcement of a repurchase is associated with significant positive returns to common stock. He attributed the value change to the information signals of the transaction. Vermaelen (1981) also examined the impact of repurchases and, like Dann, found a permanent increase in equity value. Vermaelen also concluded that the information effects were dominant in the stock price reaction, and he explicitly rejected the alternative tax and expropriation hypotheses.

In common stock repurchases, the firm experiences a simultaneous change in both assets and capital structure; in contrast, the conversion of debt and preferred stock into common does not result in a change in asset structure. Mikkelson (1981) examined the wealth effects of such pure capital structure changes. He found that the decrease in financial leverage resulted in a decrease in both equity and firm value, however,

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[7] Dunn and Spatt (1983) speculate that sinking fund considerations may be a key explanatory variable in the sudden popularity of equity for debt exchanges.

[8] An exception to this empirical regularity is reported in Dann and Mikkelson (1983). They examine the issuance of convertible debt which is a leverage increasing transaction, and find that it is associated with negative returns to common stock.

the decrease in value is found only in the case of debt conversion and Mikkelson interprets this finding to suggest that the cause is the reduction in the corporate tax shield.[9]

3. THE SAMPLE OF EQUITY FOR DEBT EXCHANGES

3.1 Common Stock

The sample of transactions for this study includes equity for debt exchanges in 1981 and 1982 by firms which met the following criteria:

1) the firm's stock returns be available in the CRSP daily returns file.

2) the equity for debt exchange has an identifiable announcement date.

3) no other major firm-specific events occurred within 50 trading days of the exchange.

The Wall Street Journal Index and the original Wall Street Journal articles were reviewed to make certain that each of the transactions met the above criteria. These selection criteria resulted in a final sample of 150 equity for debt transactions undertaken by 119 firms. Characteristics of the sample are presented in Table 1.

Three event related dates were identified for each transaction. The date the first announcement of the exchange appeared in The Wall Street Journal is defined as the announcement date (day 0). The second date of interest is the date on which the new shares were registered with the Securities and Exchange Commission (S.E.C.), defined as the

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[9] The exchange transactions analyzed in this paper include both pure capital structure changes, where only equity is exchanged for debt, and mixed exchanges, where both equity and cash are exchanged. The mixed exchanges, like the repurchases, result in changes in both leverage and asset mix.

filing date. Typically, the filing date preceded the announcement date by one or more trading days. Finally, the pricing date is defined as the day when the firm actually issues the new shares to the investment banker. The terms of the transaction are established by the market prices on that day, and uncertainty about the transaction is not resolved until the pricing date. The pricing date was generally the last of the three dates, although there were some cases where it was coincident with the announcement date.

3.2 Senior Securities

We also analyzed senior securities for 87 of the 119 firms which participated in the 150 exchanges. The criteria for inclusion of a senior security were that it be publicly traded, and that it trade with sufficient frequency to apply the senior security methodology. Our final sample of senior securities includes 230 straight bonds, 41 convertible bonds, 51 straight preferred stocks, and 16 convertible preferred stocks.[10] This sample of senior securities is large relative to previous studies; this provides us with an opportunity to examine potential wealth transfers between security classes, and to draw statistically reliable conclusions.

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[10] We thank Compuserve, Inc. for providing the senior security price data.

4. METHODOLOGY

4.1 Common Stock Returns

Security returns were examined over an event period which extends from 50 trading days before the announcement date (day 0) to 30 trading days after. The market model is estimated over the period from t=-200 to t=-51, and the ordinary least squares coefficient estimates are denoted as $\hat{\alpha}$ and $\hat{\beta}$. The prediction error for security j on day t is defined as

$$PE_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt}) \tag{1}$$

where:

R_{jt} = the rate of return for security j on day t, and

R_{mt} = the value-weighted return for the market portfolio on day t.

For each trading day t, the average prediction error is

$$PE_t = 1/N_t \sum_{j=1}^{N_t} PE_{jt} \tag{2}$$

where

N_t = the number of securities with a prediction error defined on day t.

The cumulative average prediction error through day T is defined as

$$CPE_t = \sum_{t=-50}^{T} PE_t \ . \tag{3}$$

The cumulative average prediction error over the interval from t_1 to t_2 inclusive is

$$CPE_{t1,t2} = \sum_{t=t_1}^{t_2} PE_t \tag{4}$$

where the interval has length $L = t_2 - t_1 + 1$, reflecting the requirement that t_2 does not precede t_1 in event time.

The analysis of the significance of the PE_{jt}'s and their cumulation over defined intervals uses the methodology of Dodd and Warner (1983). The test-statistic employed is the mean standardized cumulative prediction error. For a specific interval $L_j = t_{1j}, \ldots, t_{2j}$, this test-statistic is

$$\overline{SCPE}_j = \sum_{t=T_{1j}}^{T_{2j}} (PE_{jt}/s_{jt}) \Big/ \sqrt{T_{2j} - T_{1j} + 1} \,. \tag{5}$$

s_{jt} is defined as follows

$$s_{jt} = \left(s_j^2 \left(1 + 1/D_j + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{t'=1}^{D_j} (R_{mt'} - \bar{R}_m)^2}\right)\right)^{1/2} \tag{6}$$

where s_j^2 is the residual variance for security j from the market model regression,

D_j is the number of observations during the observation period,

R_{mt} is the rate of return on the market index for day t,

$\bar{R}_m$ is the mean rate of return on the market index during the estimation period, and

$R_{mt'}$ is the rate of return on the market index for day t of the estimation period.

For a portfolio of N securities, the test-statistic is

$$Z = \sum_{j=1}^{N} \overline{SCPE}_j \Big/ \sqrt{N} \,. \tag{7}$$

which is distributed unit normal since each standardized prediction error, PE_{jt}/s_{jt}, is assumed to be distributed unit normal in the absence of abnormal performance. The interval over which $SCPE_j$ is calculated,

of abnormal performance. The interval over which $\overline{SCPE}_j$ is calculated, L_j, can be of equal or different length across securities. When the interval is equal, we analyze security performance for all firms relative to one of the three event dates and refer to this as the 'event day' technique. The event day analysis may lead to cross-sectional inconsistency because of the multiple event dates, and the fact that uncertainty about the transaction is resolved over intervals which vary from firm to firm.[11] In order to overcome this inconsistency, we also utilize an 'event interval' analysis, where L_j is firm specific.

4.2 Senior Securities

The methodology used to analyze senior security returns is described in Hite and Owers (1983). The daily return is assumed to have a normal distribution with a constant mean, μ, and variance, σ^2. Because of the relatively infrequent trading of some senior securities, an n-day return for security j is defined as

$$R_{jt}(n) \sim N(n\mu, n\sigma^2).$$

The return relates to a trade on day t after n-1 non-trading days.

We analyze senior security returns over the interval t=-10,+10 relative to the announcement date (day 0). For a given security, the mean and variance of the distribution are estimated over t= -50,-11. If a security trades on t after n-1 non-trading days, then the security return is a single observation, but an n-day return. An unbiased estimate of the return on day t is $R_{jt}(n)/n$, and thus prediction errors are de-

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[11] For example, with the event day (day 0) defined as the announcement date, at day +3 some firms will be past their pricing while others will not yet have reached that date.

fined as

$$PE_{jt} = R_{jt}(n) - n\hat{\mu} \tag{8}$$

where the event period is from -10 to +10, and n_t is equal to (greater than) one if j trades (does not trade) on day t-1. The daily average prediction error (PE_t) is as defined above, and the standardized prediction error for security j on day t is defined as

$$SPE_{jt} = PE_{jt} / s_j\sqrt{n} \quad . \tag{9}$$

where s_j is the estimated standard deviation of the return on senior security j over the estimation interval (-50,-11). As in the equity methodology, the mean standardized cumulative prediction error, $\overline{SCPE}_{jt}$, is used for statistical tests, with the security included only on days when it trades.

5. RESULTS

5.1 Equity Returns : Complete Sample

5.1.1 Event Day Methodology

In Table 2, we report the daily mean prediction errors and the cumulative mean prediction errors (CPE) for event days -50 through +30. Figure 1 is a plot of the CPE over the same period. The mean cumulative prediction errors for various intervals around the announcement date, and the corresponding test-statistics are reported in Table 3. The CPE over the 50 days ending with the announcement is -0.0089, and the test-statistic indicates that it is not significant. There are significant changes, however, during the ten days around the announcement of the exchange. In fact, the CPE is close to the maximum pre-event level on day -5, but then negative daily prediction errors for days -4 through day 0

cause the CPE to decline to -0.0089 on day 0, which is its lowest value during the entire 81 day event period.

The event day technique provides evidence that the announcement of an equity for debt exchange is associated with significantly negative returns to shareholders. The individual day test-statistics for days -2,-1 and 0 are -2.63, -4.19, and -4.90, respectively, and these are the largest of any of the daily prediction errors. The two-day announcement period prediction error is -0.0128 with a test-statistic of -7.18. In Table 4, we report the sample distribution of the two-day cumulative prediction errors; and while there is wide variation in the cross-section, it is clear than, on average, the announcement is associated with negative returns. In our sample, 103 transactions (68.7%) were associated with negative two-day excess returns.

The negative returns which are associated with the announcement are then reversed in the post-event period. The sum of the daily prediction errors for days +1 to +10 is 0.0145 (test-statistic, 3.35), with 0.0135 of that total occurring during event days +6 through +10. The positive trend continues through day +30 when the sum of the daily prediction errors is 0.0117, the maximum for the 81 day period of analysis. We find the post-event increase curious, and will discuss it further in a later section of the paper.

Our results are quite similar to those reported in several recent papers.[12] Although the samples and methods of analysis were different, each of the papers reported a significantly negative price reaction at

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[12] In Rogers and Owers (1983), we report results on a sample of firms which exchanged stock for debt in 1981. Subsequent to the completion of this research, we became aware of studies of equity for debt swaps by Finnerty (1983), Woolridge (1983), and Peavey and Scott (1983).

the announcement, followed by a post-event reversal.

5.1.2 Event Interval Methodology

Further evidence of the negative effect of the announcement of an exchange is provided by the event interval technique. The difficulty and importance of identifying the announcement date with precision in any event study is well known,[13] and is especially pertinent in the case of these exchanges since there were three key dates for each, and the uncertainty regarding the terms of the exchange was not resolved until the pricing date. In the majority of cases, the first announcement in the financial press followed by one or more days the filing with S.E.C., and one could argue, therefore, that the press announcement was not the appropriate day 0. The event interval technique allows us to examine prediction errors during any interval surrounding the exchange. We define the interval as extending from the earliest of the filing or announcement date to the pricing date. This interval varied by firm from a minimum of one day to a maximum of 21 days. The mean event interval for the 150 firms in the sample was 4.33 days.

In Table 5, we report the results of this phase of the analysis. The event interval cumulative prediction errors have a sample mean of -0.0150 (test-statistic, -5.67), and range from a maximum of 0.1047 to a minimum of -0.1245. Of the 150 transactions, 100 were associated with negative event interval prediction errors. These results clearly support those of the event day methodology, and provide stronger evidence of this negative common stock price reaction to an exchange announce-

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[13] See Brown and Warner (1983).

ment.

5.2 Equity Returns and Size of the Exchange

The pattern of cumulative prediction errors during the 81 day event interval is somewhat puzzling. The negative price reaction associated with the announcement has been described, as has the post-event reversal. The CPE reaches a level of 0.0117 on day +30, with the majority of the increase occurring between days +5 and +26.[14] The pattern is puzzling in that the negative wealth effect of the exchanges appears to be transitory, since the announcement causes only a brief discontinuity in the generally positive trend of the cumulative prediction errors. The previous studies of capital structure changes have found the announcements to cause a one-time revaluation of the equity, with no significant post-event reversal.

A possible explanation of the excess returns pattern observed in this study is the price pressure hypothesis discussed by Scholes (1972), Marsh (1979), and recently, by Asquith and Mullins (1983). This hypothesis asserts that newly issued shares create a supply/demand imbalance, and that those additional shares must therefore be sold at a discount. Furthermore, the size of the discount is a positive function of the size of the issue. Equity for debt exchanges have characteristics similar to secondary distributions,[15] and if the newly issued shares did

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[14] During this 21-day interval, there are four statistically significant positive average prediction errors, and only seven days with negative average prediction errors.

[15] Scholes reported the average proportion of the firm traded in his sample to be 0.0216; the average proportion of equity exchange in our sample is 0.0210.

cause a supply imbalance, a pattern of excess returns similar to that observed here might result.

Previous studies of the price pressure hypothesis have produced conflicting results. Neither Scholes nor Marsh found evidence to support the existence of a price pressure effect in studies of secondary issues and primary issues, respectively. The recent study by Asquith and Mullins, however, reports a significantly negative relationship between the announcement day prices and the size of the equity offering, providing support for the price pressure effect.

In order to test this hypothesis, we examined the relationship between the event interval cumulative prediction error, and the size of each transaction. The regression results are presented in Table 6. The ordinary least squares coefficient on the size variable is negative in sign, but not significant. Examination of the residuals from the regression indicated that heteroscedasticity was present, and the regression was therefore re-estimated using weighted least squares. The weights utilized were the inverse of the standard errors of the event-interval prediction errors for each security. The weighted least square approach provided an overall improvement in the fit of the estimation equation, as indicated by the adjusted R^2. Furthermore, the negative relationship between size and the cumulative prediction error is stronger, and the test-statistic is marginally significant. This result indicates that price pressure may have caused some of the decline in stock prices during the interval, however, the magnitude of the price pressure effect is not sufficient to explain the total decline in stock prices.

5.3 Senior Security Returns

We next examine whether the losses to shareholders are merely wealth transfers to the holders of bonds and/or other senior securities. Given the decrease in financial leverage, such a positive revaluation of senior securities might be expected because of the lower expected bankruptcy costs, the change in relative priority of claims and the change in wealth transfer incentives discussed earlier. We investigate four classes of senior securities: straight bonds, convertible bonds, straight preferred, and convertible preferred.

The daily mean prediction errors and the cumulative sum of the prediction errors are reported in Table 7; also included there are the numbers of each type of security which traded on each of the 21 days examined. In Table 8, we report statistics for various intervals and days relative to the announcement date of the exchange (day 0). The interpretation of the interval statistics is complicated by the fact that a number of securities did not trade during the immediate announcement period (days -1, 0). To capture as much information as possible about the price reaction of these securities to the announcement, we report an interval 'around day 0' which includes all senior securities in the sample. This interval extends from the last trading day prior to day -1 through the first trading day on or after day 0.

The mean cumulative prediction error around day 0 is 0.000 for straight debt, -0.005 for the convertible debt, -0.006 for straight preferred, and -0.020 for convertible preferred. Of the four, only the CPE for the convertible preferred is statistically significant (test-statistic, -4.80), and evidence of the negative revaluation of the convertible

preferred is present in each of the intervals examined. While not always statistically significant, the cumulative excess returns to both forms of preferred stock are negative for all of the intervals, while those for straight debt are non-negative for all except day 0.[16]

The only evidence of a possible wealth transfer between common stock and straight debt occurs in the interval from day -10 through day 0, when the cumulative average excess return for straight debt is 0.004 (test-statistic, 3.16), and that for the common is -0.019 (test-statistic, -1.72). Since most of the positive effect for the straight debt occurs during the early days of the interval, i.e. during the period from day -10 to day -5, the increase does not appear to be related to the announcement of the exchange.[17] Overall, there does not appear to be evidence of a wealth transfer between the security classes over the 21 day interval from t=-10,+10, especially since the common stock CPE has recovered to pre-event levels by day +10.

Further information about the sample distribution of senior security returns is provided in Table 9. Here, we look more closely at the interval around day 0, and present frequency distributions and ranges for each security type. While there is substantial variation in indi-

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[16] We find the results for the straight preferred surprising; a priori, we expected it to behave in a fashion similar to the straight debt, i.e. a non-negative response to the exchange. This expectation was based upon the increased relative priority of the preferred after the exchange, and the lower expected bankruptcy costs. The evidence, however, indicates that the negative response to the exchange was quite general; for example, in Table 7, 17 of the 21 daily prediction errors are negative, and in Table 8, all of the intervals reported have negative cumulative daily prediction errors (ΣPE's).

[17] A possible explanation of the positive excess returns to the debt is that they may be associated with the open market purchases of bonds by the investment bankers who have arranged the exchange.

vidual security returns within each group, the table indicates that the two classes of preferred stock had a more negative response to the exchange announcement than did the two classes of debt. In fact, the overall reaction of the preferred stock is very similar to that of the common stock around the announcement. This trend is obvious both in the magnitudes of the ΣPE's, and in the percentages of securities with negative ΣPE's.[18]

The results reported above are on the aggregate behavior of each class of senior securities in the sample. As a final step in the analysis, we examined the potential wealth transfers at the firm level by matching the announcement period abnormal returns on each firm's equity with that of its own senior securities.[19] The correlation coefficients of common stock abnormal returns with those of each of the senior securities were then computed. The coefficients are -.0651 for straight debt, +.3397* for convertible debt, +.0767 for straight preferred, and +.3544* for convertible preferred (*indicates significance at .05). These results are more consistent with priors than those reported above since the two convertible senior securities decline in value along with the equity, while the two non-convertible senior securities do not have a significant change in value. This evidence is not consistent with a transfer of wealth among security classes, but it is consistent with an overall reduction in firm value associated with the announcement of an equity for debt exchange.

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[18] That 69% of both the straight and convertible preferred issues had negative PE's is strikingly consistent with the 69% and 67% negative equity returns reported in Tables 4 and 5.

[19] The event interval abnormal return for each common stock was matched with the abnormal return around day 0 for senior securities.

In conclusion, the evidence presented in this section does not support the existence of a wealth transfer from common stock holders to holders of senior securities, nor among the various classes of senior securities. There is evidence, however, in both the aggregate, and at the firm level, of a reduction in firm value which results from the announcement of an equity for debt exchange.

5.4 Pure and Mixed Capital Structure Changes

The majority of the transactions in the sample were pure capital structure changes wherein only new common equity was exchanged for debt. There were a number of firms, however, which used a combination of cash and common stock to facilitate the exchange. Such a mixed transaction is different from a pure capital structure change in several ways: 1) the level of assets is reduced, 2) the decline in financial leverage is moderated, and 3) there is less dilution of the position of existing shareholders. The two types of exchange are equivalent, however, in their reduction in interest tax shields.[20] In an attempt to discern among the alternative factors which affect firm value, the sample was partitioned into pure and mixed exchanges, and excess returns were computed for each group. The results are summarized in Table 10.

The patterns of excess returns are quite different for the two groups; the CPE for the mixed transactions exceeds that for the pure exchanges throughout the 81 day period of analysis, and the CPE for the mixed group never falls below 0.00. There were also different valuation

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[20] Those firms in the mixed exchange group may also be sending a different signal to the market than those in the pure exchange group. These signals might relate to reinvestment opportunities, potential reversal of the capital structure change, etc.

reactions to the exchange announcement for the groups; the reaction of the pure exchange group was more significantly negative, both during the two-day announcement period, and during the event interval. In addition, the post event recovery for the mixed group is larger.[21]

There are several other characteristics of the group which used cash in the exchange which are worth noting. First, when cash was used, there was a strong tendency to use it for roughly 50% of the transaction.[22] Second, only one-half of the firms in the mixed exchange group had negative abnormal stock returns associated with the announcement of the exchange. Finally, there was not a systematic relationship between the proportion of cash used and the abnormal return on that transaction.[23]

While the small sample size for the mixed group makes it difficult to draw clear conclusions from this analysis, the results reported here are consistent with several of the valuation implications discussed earlier: (i) the reduction in tax shields has a negative impact on firm value, (ii) the larger number of shares issued in a pure exchange relative to a mixed exchange has a negative impact on share prices; this might result from both the price pressure effect and the greater dilu-

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[21] Because of the small sample size, we examined the results for individual firms in the cash group, and found that the reported results were general.

[22] In 72% of the mixed transactions, the proportion of cash was within the range of 47-53% of the exchange. As mentioned earlier in the paper, 50% cash is the generally accepted guideline for the transaction to qualify for tax-preferred treatment.

[23] The correlation coefficient of the event interval CPE and the proportion of cash used in the exchange is not significantly different than zero.

tion of shareholder's positions,[24] and (iii) a pure exchange signals different information than does a mixed exchange.

6. SUMMARY

This paper examines the impact on security prices of an equity for debt exchange. Common stockholders earn significantly negative abnormal returns during both the two-day announcement period and the event interval which extends from the earliest event-related day through the day of the exchange. This result is consistent with most previous studies of the wealth effects of capital structure change. We report two additional findings which are not consistent with prior research, however. First, we find evidence that a portion of the decrease in common stock price results from a price pressure effect, implying that the demand curve for shares is downward sloping. Secondly, we find that the negative effect on common stock value is only temporary, and that abnormal returns in the post-event period are significantly positive.

We also examine the returns to four classes of senior securities around the announcement of the exchange. There are generally negative abnormal returns to both classes of preferred stockholders, however, only those to the convertible preferred are significant. Overall, there are no significant changes in the value of debt securities, and therefore, no evidence of wealth transfers among the security classes. The results are consistent with an overall decrease in firm value at the announcement of the exchange.

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[24] The absence of a systematic relationship between the proportion of cash and abnormal returns is not consistent with the dilution effect.

Finally, we examine the results for two sub-groups within the sample, pure exchanges and those where cash was used along with equity, and find notable differences. The reaction of the cash group to the announcement was less negative, and the post-event recovery for the group was more robust.

In conclusion, we find equity for debt exchanges to be associated with a decrease in firm value in the interval immediately around the first public announcement. Despite widely cited 'improvements' in accounting results for the current period, security holders experienced at least a short-term decrease in wealth. This decrease is consistent with most prior studies of the impact of capital structure change on firm value. Unlike previous studies, however, we find the negative revaluation of the common stock to be only temporary. Of the hypotheses examined, none is consistent with this price pattern, therefore, the cause of this pattern remains an unanswered question.

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TABLE 1

Characteristics of the sample of 150 equity for debt exchanges by size, financial leverage, and exchange type.

A. Size distribution of transactions (S), where size is the number of new shares as a percentage of pre-exchange equity.

S			N		
	S	.10	2		
.10	S	.08	2	Maximum	14.80%
.08	S	.06	4	Minimum	.03
.06	S	.04	13	Mean	2.11
.04	S	.02	31		
.02	S	.00	98		
			150		

B. Financial leverage of exchanging firms as measured by the book ratio of debt to total assets.

Quartile	Debt Ratio
1	.364 - .508
2	.509 - .585
3	.586 - .683
4	.684 - .980

C. Classification by type of exchange.

	Number
Pure Exchanges (no cash)	19
Mixed Exchanges (cash and equity)	131
Total	150

TABLE 2

Daily prediction errors (PE) and the cumulative prediction errors (CPE) around the first announcement (day 0) of equity for debt exchanges.

Day	PE	CPE
-50	0.0014	0.0014
-40	0.0005	-0.0050
-30	0.0009	0.0001
-20	0.0010	0.0052
-10	-0.0009	0.0083
- 9	-0.0018	0.0065
- 8	0.0008	0.0073
- 7	0.0005	0.0078
- 6	0.0012	0.0089
- 5	0.0001	0.0090
- 4	-0.0008	0.0083
- 3	-0.0004	0.0078
- 2	-0.0040	0.0039
-	-0.0060	-0.0021
0	-0.0068	-0.0089
1	0.0009	-0.0081
2	-0.0001	-0.0082
3	0.0004	-0.0077
4	-0.0003	-0.0080
5	0.0001	-0.0079
6	0.0032	-0.0047
7	0.0038	-0.0009
8	0.0028	0.0019
9	0.0013	0.0032
10	0.0024	0.0056
20	0.0013	0.0030
30	0.0012	0.0117

TABLE 3

Mean CPE's for various intervals around the first announcement date and the corresponding test-statistics.

Days In Interval	CPE	t-statistic
-50 to 0	-0.009	-0.86
-10 to 0	-0.0181	-4.15
-5 to 0	-0.0178	-5.76
-1 to 0	-0.0128	-7.18
1 to 5	0.001	0.37
1 to 10	0.0145	3.35

TABLE 4

Distribution of the two-day (-1,0) announcement period CPE's for the sample of equity for debt exchanges.

CPE	N
-.10 > CPE	1
-.08 > CPE > -.10	3
-.06 > CPE > -.08	6
-.04 > CPE > -.06	9
-.02 > CPE > -.04	38
.00 > CPE > -.02	46
	103
.02 > CPE > .00	33
.04 > CPE > .02	8
.06 > CPE > .04	4
.08 > CPE > .06	3
	47
	150

Maximum	.0684
Minimum	-.1178
Mean	-.0128
Percent negative	68.7%

TABLE 5

Distribution of the event interval common stock cumulative abnormal returns for the sample of equity for debt exchanges.

CPE	N
-.10 > CPE	5
-.08 > CPE > -.10	1
-.06 > CPE > -.08	8
-.04 > PE > -.06	14
-.02 > PE > -.04	35
.00 > PE > -.02	37
	100
.02 > PE > .00	31
.04 > PE > .02	12
.06 > PE > .04	3
.08 > PE > .06	2
.10 > PE > .08	1
PE > .10	1
	50
	===
	150

Maximum .1047
Minimum -.1245

Mean -.0150 (Z=-5.670)

Percent Negative 66.7%

TABLE 6

Results of the regression of the event interval cumulative prediction errors (CPE_i) on the size (S_i) of the transaction for 150 equity for debt exchanges. (test-statistics in parentheses).

$$CPE_i = \gamma_0 + \gamma_1 S_i + e_i$$

	γ_0	γ_1	R^2
Ordinary Least Squares	-1.02 (-2.41)	-0.19 (-1.39)	.014
Weighted Least Squares	0.71 (1.95)	-0.29 (-1.92)	.139*

*R^2 is adjusted for the suppression of the intercept

TABLE 7

Daily average prediction errors (PE) and cumulative sum of the daily average prediction errors (ΣPE) for senior securities. N is the number of issues traded on each day.

	Straight Debt			Convertible Debt			Straight Preferred			Convertible Preferred		
Day(s)	PE	ΣPE	N	PE	ΣPE	N	PE	ΣPE	N	PE	ΣPE	N
-10	0.004	0.004	133	-0.003	-0.003	28	-0.002	-0.002	33	-0.008	-0.008	34
-9	0.003	0.007	124	-0.001	-0.004	24	-0.005	-0.007	33	0.000	-0.007	36
-8	0.000	0.007	123	0.001	-0.002	28	-0.002	-0.009	34	0.014	0.007	37
-7	0.004	0.011	124	-0.003	-0.005	29	-0.005	-0.014	36	0.002	0.008	37
-6	-0.003	0.007	128	0.006	0.001	31	0.005	-0.009	29	-0.002	0.006	37
-5	0.001	0.008	134	0.001	0.002	25	-0.009	-0.018	30	0.003	0.009	40
-4	-0.000	0.008	120	-0.005	-0.004	28	-0.001	-0.019	33	0.001	0.010	37
-3	-0.001	0.007	131	-0.000	-0.004	30	0.003	-0.016	32	0.001	0.011	34
-2	0.000	0.007	131	-0.006	-0.010	32	-0.004	-0.020	32	-0.008	0.003	29
-1	0.002	0.008	138	0.004	-0.006	28	-0.001	-0.020	33	-0.011	-0.008	41
0	-0.001	0.008	131	0.001	-0.005	24	-0.003	-0.023	32	-0.014	-0.022	35
1	-0.000	0.007	131	-0.003	-0.008	27	-0.010	-0.033	29	-0.009	-0.030	42
2	0.000	0.008	134	-0.001	-0.010	27	-0.003	-0.036	33	-0.001	-0.032	41
3	-0.003	0.004	134	0.000	-0.009	24	0.000	-0.036	32	-0.004	-0.036	41
4	-0.003	0.002	127	0.002	-0.007	26	-0.001	-0.037	36	0.003	-0.033	31
5	0.000	0.002	128	-0.006	-0.013	23	-0.006	-0.043	33	0.000	-0.033	35
6	0.004	0.005	140	0.002	-0.011	30	-0.006	-0.048	35	0.001	-0.029	32
7	0.001	0.006	119	-0.002	-0.013	21	-0.003	-0.051	35	0.003	-0.029	32
8	-0.001	0.005	129	0.004	-0.009	26	0.002	-0.049	30	0.004	-0.025	34
9	-0.001	0.004	131	-0.001	-0.010	30	-0.003	-0.052	26	0.005	-0.020	37
10	0.002	0.006	124	-0.002	-0.012	25	-0.000	-0.052	31	-0.006	-0.026	34

TABLE 8

Cumulative average prediction errors (CPE) for senior securities during various intervals around the exchange announcement, and the corresponding test-statistics.

Days in Interval	Straight Debt		Convertible Debt		Straight Preferred		Convertible Preferred	
	CPE	t	CPE	t	CPE	t	CPE	t
-10 to 10	.003	2.54	-.008	-0.55	-.033	-2.65	-0.019	-1.78
-10 to 0	.004	3.16	-.004	-0.13	-.015	-1.60	-0.014	-1.72
-4 to 0	.000	1.44	-.005	-0.92	-.004	-0.19	-0.023	-3.92
-1 to 0	.001	0.55	.004	1.14	-.003	0.09	-0.021	-4.99
-1	.002	1.03	.004	1.56	-.001	0.72	-0.011	-2.92
0	-.001	-0.03	.001	-0.56	-.003	-0.73	-0.014	-3.96
Around Day 0	.000	0.31	-.005	-1.36	-.006	-0.94	-0.020	-4.80

TABLE 9

Frequency distribution of the CPE for four classes of senior securities during the event interval surrounding the first public announcement of the equity for debt exchange.

CPE Range	Number of observations by type of security			
	Straight Debt	Convertible Debt	Straight Preferred	Convertible Preferred
-.10 > CPE	0	1	1	1
-.08 > CPE > -.10	3	1	1	1
-.06 > CPE > -.08	4	1	1	4
-.04 > CPE > -.06	9	2	1	9
-.02 > CPE > -.04	26	9	7	14
.00 > CPE > -.02	78	8	24	7
.02 > CPE > .00	71	12	6	11
.04 > CPE > .02	23	3	6	2
.06 > CPE > .04	10	2	3	2
.08 > CPE > .06	4	2	1	0
.10 > CPE > .08	1	0	0	0
CPE > .10	1	0	0	1
Maximum	0.111	0.079	0.068	0.126
Minimum	-0.123	-0.110	-0.111	-0.106
Mean	-0.0004	-0.005	-0.0063	-0.0198
Percent Negative	52%	54%	69%	69%

TABLE 10

Mean cumulative prediction errors for pure and mixed exchanges for several intervals around the exchange announcement (test-statistics in parentheses).

Day(s) in Interval	Mixed (Cash) n = 19	Pure (Non-Cash) n = 131
-50 to 0	.0265 (0.92)	-.0001 (-0.09)
-10 to 0	-.0050 (-0.71)	-.0075 (-1.66)
-5 to 0	-.0055 (-0.53)	-.0101 (-2.34)
-1 to 0	-.0079 (-2.12)	-.0079 (-4.55)
0	-.0043 (-1.11)	-.0078 (-4.82)
1 to 10	.0133 (1.09)	.0069 (1.55)
1 to 25	.0526 (3.65)	.0161 (2.05)
Event Interval	-.002 (-0.28)	-.0140 (-4.77)